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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/049,695	03/27/98	BILLING-MEDEL	P 6066.US.PI

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STEVEN F WEINSTOCK
ABBOTT LABORATORIES
D 377 AP6D
100 ABBOTT PARK ROAD
ABBOTT PARK IL 60064-3500

EXAMINER	
SUN HOFFMAN,L	
ART UNIT	**PAPER NUMBER**
1642	10
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/049,695	Applicant(s) Billing-Medel et al
	Examiner Lin Sun-Hoffman	Group Art Unit 1642

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-18* is/are pending in the application.

Of the above, claim(s) *7-10, 13, 14, and 16* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-6, 11, 12, 15, 17, and 18* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. Applicant's election of Group 1, claims 1-6, 11, 12, 15 and 17-18 in Paper No.8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1-6, 11, 12, 15 and 17-18 are pending for the examination.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Applicant claimed priority under USC 120 in the first line of the specification, wherein the current application is a CIP of US application 08828845. The oath and declaration file on 6/28/98, in Paper No. 5 fails to claim such priority.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

cancelled

The claimed invention is directed to non-statutory subject matter. Claims 17 and 18 are directed to a gene. The claims encompass a natural exsiting product.

Claim Rejections - 35 USC § 112

4. Claims 1-6, 12, 15, 17-18 are rejected under 35 U.S.C. 112, **second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language of "% identity" in claims 1-6, 12, 15, 17-18 is indefinite in the absence of a teaching in the specification of the percentage algorithm to use and the parameters to set in the algorithm.

Claims 1-4 are vague and indefinite in reciting of "selectively hybridization," because it is not clear what kind of the conditions the invention is going to use, such as the hybridization temperature and the concentration of washing. It is not clear which conditions are selective and which are non-selective. .

5. Claims 1-4, 17 and 18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The written description in this case only sets forth SEQ ID NO:4 or 5 and the fragment thereof and therefore the written description is not commensurate in scope with the claims drawn to a gene of a DNA molecule comprising a DNA sequence of SEQ ID NO:4 or 5.

Furthermore, In *The Reagents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), the court held that a generic statement which defines a genus of nucleic acids by only their functional activity does not provide an adequate written description of the genus. The court

indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA . . . 'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention."

The CS197 gene would be expected to have both introns and exons as well as regulatory elements. The specification teaches that mRNA was isolated from GI tract tumor tissue and used to generate a cDNA library and that cDNA inserts from random isolates of the GI tract tissue libraries were sequenced in part, analyzed in detail and are disclosed as SEQ ID NO:1-3 which are the overlapping sequences, SEQ ID NO: 4 which is the full-length sequence and the SEQ ID NO: 5 which is the consensus sequence. These polynucleotides may contain an entire open reading frame with or without associated regulatory sequences for a particular gene, or they may encode only a portion of the gene of interest. This is attributed to the fact that many genes are several hundred and sometimes several thousand bases in length, and with current technology, cannot be cloned in their entirety because of vector limitations, incomplete reverse transcription of the first strand or incomplete replication of the second strand. Thus, the structure of a CS 197 gene is not defined because it is not possible to work backward from the cDNA to derive a CA 197 gene. With the exception of SEQ ID NO:4 and 5, the skilled artisan cannot envision the detailed structure of the encompassed polynucleotides and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method

of isolation. Adequate written description requires more than a mere statement that it is part of the invention and a reference to a potential method of isolating it. The nucleic acid itself is required.

Support for a CS197 gene is provided in the specification on page 53, line 2. However, no disclosure, beyond the mere mention of CS197 gene is made in the specification. This is insufficient to support the generic claims as provided by the Interim Written Description Guidelines published in the June 15, 1998 Federal Register at Volume 63, Number 114, pages 32639-32645.

Therefore, only an isolated polynucleotide comprising SEQ ID NO:4 or 5, but not the full breadth of the claims, meets the written description provision of 35 USC 112, first paragraph.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

1, 2

7. Claims 1, 2, 4-6, 11, 15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al (Genebank accession number AA299977; Nature, vol 377, Supp., page 3-16, 28, Sept.1995).

Claim 1 is drawn to a purified polynucleotide or a fragment thereof derived from a CS197 gene wherein said purified polynucleotide is capable of selectively hybridizing to the nucleic acid of said CS197 gene, and wherein said purified polynucleotide has at least 50% identity to a sequence selected from the group consisting of SEQ ID NO 1-2, fragment or complements thereof; or at least 80% identity with a sequence selected from the group consisting of SEQ ID NO:4, SEQ ID NO:5, and complements thereof. Claim 2 further limits claim 1 in reciting the production of polynucleotides by recombinant techniques. Claim 4 further limits claim 1 in reciting that polynucleotide comprises a sequence encoding at least one CS197 epitope.

Claim 5 recites a recombinant expression vector comprising a nucleic acid sequence which has at least 50% identity with a sequence selected from the group consisting of SEQ ID NO: 1-5 and fragments or complements thereof.

Claim 6 further limit claim 5 in reciting a host cell.

Claim 11 is directed to a cell transfected with a nucleic acid sequence and said sequence is selected from the group consisting of SEQ ID NO: 1-5, and fragments or complements thereof.

Claim 15 is directed to a composition comprising a polypeptide having at least 50% identity with a sequence selected from the group consisting of SEQ ID NO:1-2 and fragments or complements thereof; or at least 80% identity with a sequence selected from the group consisting of SEQ ID 4-5 and complements thereof.

Claim 18 is directed to a gene, or a fragment thereof, comprising DNA having at least 80% identity with SEQ ID NO 4 or 5.

Adams et al teach a fragment (AA No: AA299977) having 93% identity to SEQ ID No:1, 96% identity to SEQ ID NO:2. The reference also teaches a fragment from positions 192-243 identical to the SEQ ID No. 1 from positions 203-254, and a fragment from positions 192-258 identical to the SEQ ID No. 2 from positions 195-261. Therefore, the polynucleotide that hybridizes to the CS 197 gene is taught.

Adams et al teach to insert a fragment into a vector (page 4, column 2, top of the second full paragraph), and a cell line to be transfected by a vector (page 4, column 2, middle of the third full paragraph). Therefore, a recombinant polynucleotide, a vector and a cell are taught.

It is inherent that the polynucleotide encodes a sequence containing at least one CS197 epitope..

8. Claims 12 and 17 are rejected under 35 U.S.C. 102(e) as being by Lal et al (US Patent 5856139, Jan 5, 1999). Canceled

Claim 12 is directed to a method for producing a polypeptide comprising at least one CS 197 epitope, said method comprising incubating host cells that have been transfected with an expression vector containing a polypeptide sequence encoding a polypeptide, wherein said polypeptide comprises an amino acid sequence having at least 50% identity with an amino acid sequence selected from the group consisting of SEQ ID NO: 16-20, and fragments thereof.

Claim 17 is directed to a gene, or a fragment thereof, which codes for a CS 197 protein which comprises an amino acid sequence with at least 50% identity with SEQ ID NO: 16.

Lal et al teach a SEQ ID NO:1 having an identity of 98%(positions from 1-151) to SEQ ID NO: 16, 100% (positions from 19-47) to SEQ ID NO:17, 100% (positions from 48-83) to

SEQ ID NO:18, 97%(positions from 118-148) to SEQ ID NO:19, 94%(positions from 118-148) to SEQ ID NO:20.

Lal et al also teach a fragment of SEQ ID NO:1 from positions 1-60 identical to positions 1-60 of SEQ ID NO:16.

Lal et al also teach a fragment of SEQ ID NO:1 from positions 86-116 identical to positions 1-31 of SEQ ID NO:19.

Lal et al also teach a fragment of SEQ ID NO:1 from positions 1-60 identical to positions 118-146 of SEQ ID NO:20.

Lal et al also teach that SEQ ID NO:2 encodes SEQ ID NO:1 (see column 2, lines 35-36), therefore, a gene or a fragment is anticipated.

Lal et al also teach an expression of a protein of SEQ ID NO:1 or a fragment in a vector via a host cell (column 29, lines 28-32).

Claim Rejections - 35 USC § 103

1, 3

9. Claims 1, 3, 5, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al or Hillier et al (see Genbank EST, accession number T78178, submitted on March 15, 1995; and accession number T85589, submitted on March 17, 1995) in view of Olson et al. US Patent No. 4,889,806 and Sambrook et al (Molecular Cloning, a Laboratory Manual, 1989, Cold Spring Harbor Press, p. 16.3-4).

Claim 3 further limits claim 1 in reciting that the polynucleotide is produced by synthetic technique.

Adams et al' disclosures are described above (to SEQ ID NO: 1 and 2 of claims 1 and 5).

Hillier (AA No: T78178) teaches a sequence has 50.2% identity to SEQ ID No:4 and 50% identity to SEQ ID No:5. The reference also teaches a fragment (from positions 1-120) identical to a fragment of SEQ ID No:4 (from positions 43-162) and identical to a fragment of SEQ ID No:5 (from positions 51-170). (Claim 5)

Hillier (AA No: T85589) teaches a sequence has 52% identity to SEQ ID No:3. The reference also teaches a fragment (from positions 121-180) identical to a fragment of SEQ ID No:3 (from positions 121-180). (Claim 5)

However, Adams et al or Hillier et al differ from the instant invention in failing to disclose producing a fragment of polynucleotide via a recombinant vector and a cell line, or synthetic method.

US Patent No. 4,889,806 teaches vectors, or plasmids defined as Yeast Artificial Chromosome (YAC) vectors (col 3, lines 42-44) and teach that with the advent of recombinant DNA and molecular cloning technology it is now conventional to transfer genetic information into any source using small plasmids constructed in vitro and then transferred into host cells and clonally propagated and that most DNA cloning systems have a capacity for only small segments of exogenous DNA and are well suited to the analysis and manipulation of typical genes and that the YAC cloning system allows the cloning of large segments of exogenous DNA (col 1, lines 18-50) and have significant utility in the analysis of megabase-pair regions of DNA which lead to mapping of large regions of DNA and the cloning of candidate genes involved in disease.

Sambrook et al teach that cloned genes are conventionally expressed using expression vectors and that expression of cloned proteins have been used to: (1) confirm the identity of a

cloned gene by using immunological or functional assays to detect the encoded protein; (2) produce large amounts of proteins of biological interest that are normally available in only limited quantities from natural sources; (3) to study the biosynthesis and intracellular transport of proteins following their expression in various cell types; (4)to elucidate structure-function relationships by analyzing the properties of normal and mutant proteins (para bridging pages 16.3 and 16.4). Moreover, it is also conventional to make a synthetic DNA sequence by a DNA synthesizer.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to combine a cDNA, containing nucleotides as set forth in SEQ ID NO:1-5 or a fragment thereof, of Hillier et al or Adams et al with the methods of US Patent No. 4,889,806 to produce vectors for the expression of the nucleotides because Sambrook et al and US Parent No. 4,889,806 teach that a DNA is conventionally expressed using a vector system. One of ordinary skill in the art would have been motivated to combine the sequences of Adams et al or Hillier et al and the methods of US Patent No. 4,889,806 because the polynucleotide sequences of Adams et or Hillier et al are associated with human cancers wherein Sambrook et al teach that expression of cloned proteins have been used to (1) confirm the identity of a cloned gene by using immunological or functional assays to detect the encoded protein; (2) produce large amounts of proteins of biological interest that are normally available in only limited quantities from natural sources; (3) to study the biosynthesis and intracellular transport of proteins following their expression in various cell types; (4) to elucidate structure-function relationships by analyzing the properties of normal and mutant proteins which would be useful in characterizing the involvement of the gene in the etiology of the disease and one would be motivated to use the

YAC cloning system because US Patent No. 4,889,806 specifically teaches that the system has significant utility in the analysis of megabase-pair regions of DNA which would lead to the cloning of candidate genes involved in disease.

Conclusion

10. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lin Sun-Hoffman, Ph.D., whose telephone number is (703)-308-7552. The examiner can normally be reached on Monday to Friday from 7:30 am to 4:00 pm Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Hutzell, Ph.D., who can be reached on (703) -308-4310.

Lin Sun-Hoffman, Ph.D.

Sheela J. Huff

SHEELA HUFF
PRIMARY EXAMINER

August 25, 1999